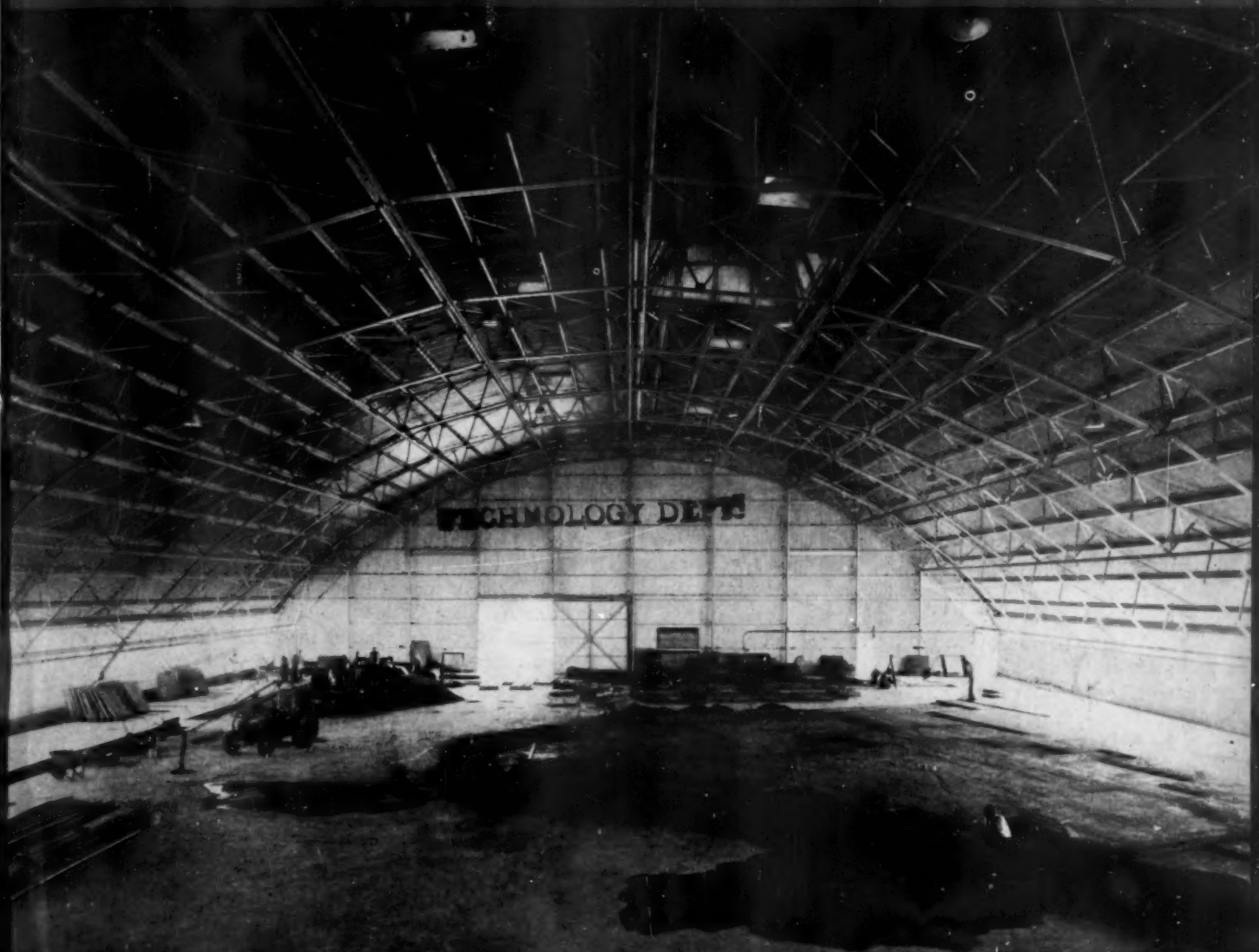
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# SCIENCE NEWS LETTER

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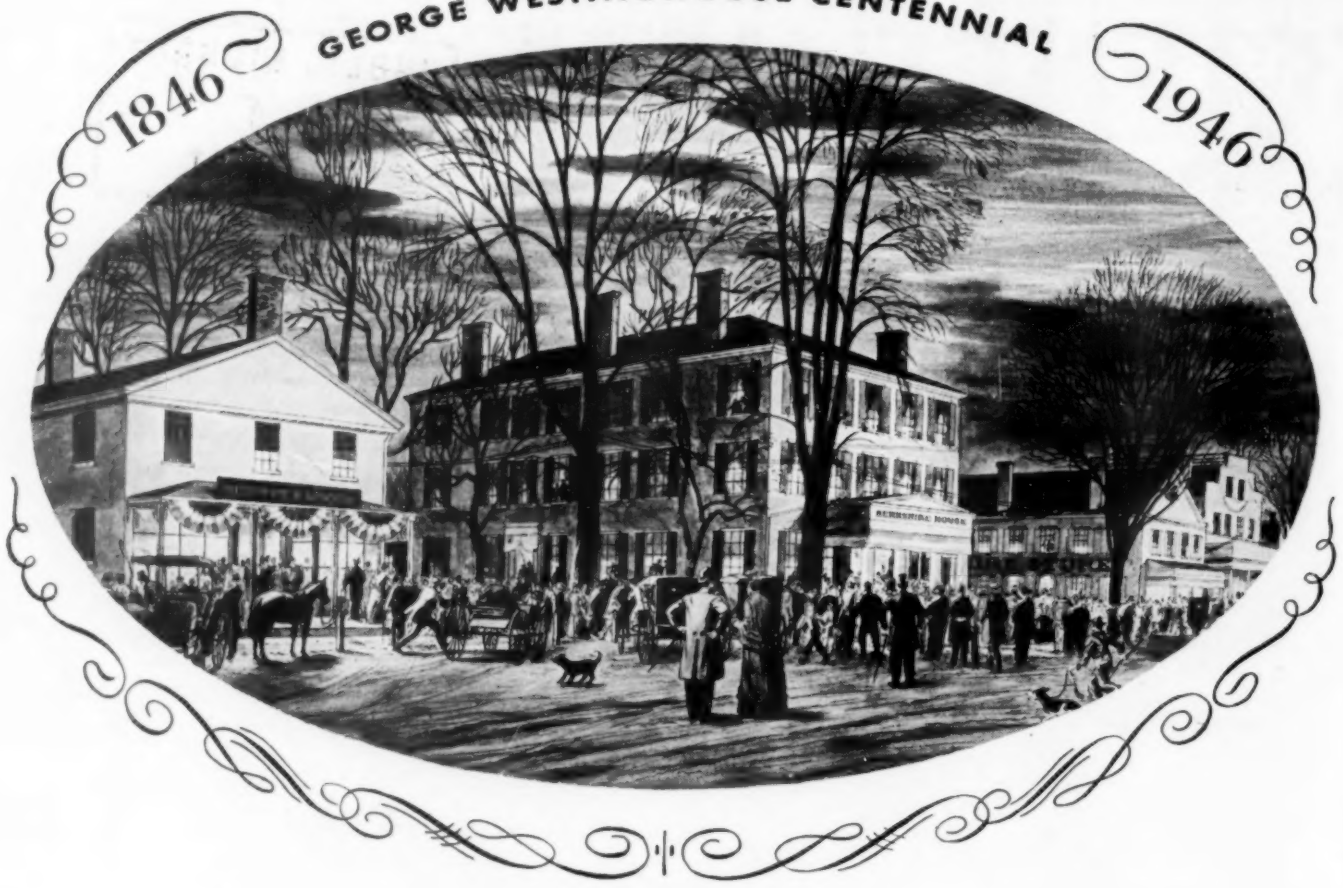



## Typhoon-Proof Harbor

See Page 103

A SCIENCE SERVICE PUBLICATION

1921 TWENTY-FIFTH ANNIVERSARY 1946




# Lighting Main Street

Sixty years ago electric lighting, as we enjoy it today, was unknown. This was because only one kind of electricity was available—*direct current*—which could be transmitted economically for only a short distance.

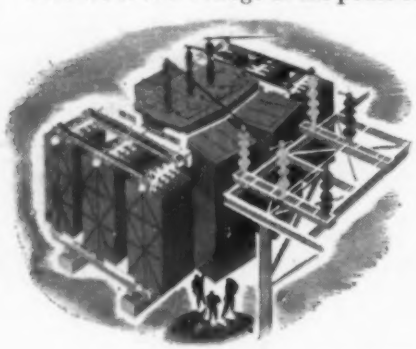
About this time George Westinghouse began experimenting with the "new" alternating current electricity. He soon realized that here was the golden key to a new industrial age—for he found that alternating current could easily be "transformed" to high or low voltage, at will.

Westinghouse reasoned that alternating current could thus be transmitted for many miles at *high voltage*, then reduced to *low voltage* at the point of use.

This great industrial pioneer acted at once. He acquired the rights to manufacture a new invention—the "a-c transformer." He then redesigned it completely and sent his associate, William Stanley, to the outskirts of Great Barrington, Massachusetts . . . to install the first complete a-c transmission system in America.

On the historic night of March 20, 1886, William Stanley closed a master switch and electric lights blazed on Main Street, Great Barrington, nearly a mile away.

*George Westinghouse's dream of the long-distance transmission of electricity was well on its way to fulfillment.*



Westinghouse
PLANTS IN 25 CITIES OFFICES EVERYWHERE

**TODAY** . . . The Westinghouse Electric Corporation manufactures hundreds of different types of transformers—from thimble-size units for radio receivers to giants with ratings as high as 100,000 kva. Two of the latter type . . . each as big as a six-room house . . . were built by Westinghouse for a large eastern utility to transform the output of a huge power plant soon to be put into service.

*Tune in:* TED MALONE—*Monday, Wednesday, Friday, 11:45 am, EDT, American Network*

OCEANOGRAPHY

# Undersea Regions Studied

**Life and conditions in the vast regions under the surface of the sea, hitherto little known, are important to future planning for peace or war.**

By DANIEL WILKES
Science Service Crossroads Correspondent

➤ THE VAST reaches of water under the surface of the sea are a highway to war or a frontier beyond which scientific conquistadores may enrich the lives of all men.

This is indicated by Comdr. Roger P. Revelle, in charge of the oceanographic section for Joint Task Force One, and in peacetime a staff member of the Scripps Institution of Oceanography at La Jolla, Calif.

While Comdr. Revelle stressed the peacetime aspects of oceanography, he indicated that the sea, which covers about 70% of the earth's surface, cannot be overlooked by nations if means for survival in atomic warfare are being sought. Speaking of this negative side of oceanography, he pointed out that atomic-powered submarines with very long ranges may not be too far in the future. He added, too, that it may be possible to track such submarines by means of their exhaust, which might emit fission products.

Fission products can be tracked in the water. Even now, several members of Comdr. Revelle's staff are making a tracer study of the currents and the movement of radioactive fission products, using vessels equipped with Geiger counters and devices for taking samples of deep water.

The science of oceanography is only about 65 years old and there are only about a dozen important oceanographic institutions in the world. In some respects more is known about the topography of the moon than about the bottom of the sea and of distant stars than of ocean currents.

While the surface of the sea has been man's most important highway for centuries, its great depths and the storms that rage within it and create weather are only beginning to unfold.

During the war a great deal was learned about the extent to which the environment — temperature, weather, plant and sea life—changes at different levels and in different areas of the sea.

One of the methods of study during the war was with new sound devices, such as sonar. In water as in air, the velocity of sound increases with increasing temperature, pressure and salinity.

Using their sound equipment, scientists at the Naval Electronics Sound Laboratory at San Diego found that there is a great temperature change a few hundred yards below the surface. Here there are great waves, somewhat like those on the surface, but much longer and slower moving. The lengths of these waves are up to a few hundred yards, and because of the geat distance between their crests, they appear to be flat. Actually these crests are as high as 300 feet. This refutes all ideas that the ocean consists of somewhat stationary layers of water in the sea, with waves at the surface.

The importance of exploring the sea thoroughly is indicated by many practical considerations. It is filled with minerals of every imaginable sort. Salt, already mined from the ocean in important quantities, is present in an abundance sufficient to cover all the continental United States to a depth of nearly a mile. Bromine, essential to making high octane motor fuels, is economically already being extracted from the sea. Each cubic mile of the ocean has a quarter of a million tons of this element.

Weather forecasting, vital in so many of man's activities, is dependent to a great extent on knowledge of the sea. The movement of water, vertically and horizontally, and differences in temperature influence the humidity of the atmosphere creating pressure areas, rain, great air movements.

In many ways the sea is more spectacular than the land. The greatest depression, Mindanao Deep, off the coast of the southern Philippines, is 35,400 feet deep, while the highest mountain on land, Mt. Everest, is 29,000 feet. If irregularities of the earth's crust were smoothed into a rounded ball the earth would be covered by 7,500 feet of water.

If the threat of atom bombs compels all future naval vessels to be submersible, they may play hide-and-seek with enemy craft by taking advantage of "deaf spots" known to exist in ocean water. These areas of different water density, caused by combinations of currents, make it impossible to detect the presence of submarines or other submerged large bodies by the echo-searching methods usually found dependable, declares Capt. Logan McKee, in charge of ship design in the Navy's Bureau of Ships.

Special maps of ocean stratification may enable submarines to find and hide under or behind these numerous "deaf spots" as bodies of troops ashore now use topographic relief maps to find and use ravines and valleys for concealment from enemy observation and protection from gunfire.

A strong hint that one of the principal factors in driving all combat ships to shelter under the surface may be the deadly radioactivity released by atom bombs was contained in Adm. W. H. P. Blandy's statement. He pointed out the grave psychological problem involved in training men to go on fighting after the ship had become contaminated with fission products.

Concurring in Adm. Blandy's opinion, Col. Stafford Warren of the Army added that while present-day fire-fighting suits will keep radioactive materials from lodging on the body and getting into



*Joint Army-Navy Task Force One photograph*

***DERBY HAT—From the air the Baker Day atomic explosion took the appearance of a derby hat for a brief instant as water, spray and steam boiled skyward out of Bikini Lagoon.***

lungs and digestive tract through the nose and mouth, they do not stop direct irradiation.

Continuing in action on contaminated ships would necessitate calling on the men to risk a very high casualty rate from a new and therefore terrifying cause. In the history of American wars, volunteers have never been lacking for ultra-hazardous missions, such as underwater demolitions and parachute jumps. Nevertheless, it is felt that asking men to stick at their posts and be "rayed" to death is a serious responsibility to impose on any officer.

*Science News Letter, August 17, 1946*

MEDICINE

# Penicillin for Skin Anthrax

**Studies during the war prove skin anthrax can be cured by penicillin. Former treatments used were anti-anthrax serum and cutting out sores.**

➤ RECOVERY of 25 patients with skin anthrax by penicillin treatment was achieved at Camp Detrick, Md., where biological, or germ, warfare studies were conducted during the war. Presumably the patients acquired the disease during efforts to develop anthrax as a weapon or to develop defenses against it in expectation of its use by the enemy.

The first three cases occurred before December, 1944, although dates of occurrence of the others and how the patients got the disease are not mentioned in the report by Maj. Harold V. Ellingson, Capt. Paul J. Kadull and Capt. Henry L. Bookwalter, Army, and Lieut. Calderon Howe, Navy, in the *Journal of the American Medical Association,* (Aug. 3).

In three of the patients, anthrax germs got into the blood as well as the skin sores. In the past this was considered a sign that the patient might not recover. These three patients, however, did get well through the penicillin treatment.

Anthrax germs disappeared from the skin sores in 24 hours or less in 22 of the patients, the Army and Navy doctors point out. In spite of this the sores went through the stages of getting larger, deep red, bleeding, breaking of the blisters, and drying with a tough black crust typical of anthrax before the days of penicillin treatment.

This suggested that a "tissue damaging factor" was produced by the germs before treatment was begun. Such a factor was subsequently discovered and will be reported by other scientists.

Anthrax is a disease of cattle which humans get from handling infected hides or hair. Aside from any potential use as a weapon in war, it is an important medical problem in the wool and leather industry. It used to kill 13 of every 100 attacked.

Cutting out the sores was the standard treatment years ago, but deaths ran high. Antianthrax serum, arsenical drugs and sulfa drugs were later used.

First report of penicillin treatment, by which three women wool workers were cured, was by Drs. Franklin D. Murphy, Alfred C. La Bocetta and John S. Lockwood, of the University of Pennsylvania. That report was made in December, 1944 (*SNL,* Dec. 16, 1944). The Army and Navy doctors at Camp Detrick, however, had already given penicillin to their first three patients but for security reasons no report was made public.

*Science News Letter, August 17, 1946*

CHEMISTRY

## Acetylene May Be Made From Natural Gas

➤ ACETYLENE gas, best known in America for its use in welding, may soon be commercially produced in this country from natural gas instead of from calcium carbide as at present. A German process of making it from coal gas is one of the important discoveries of American scientists investigating chemical secrets of former enemies.

In addition to its use in the oxy-acetylene flame for welding and cutting metals, acetylene is the starting point in the synthesis of a large number of organic compounds, and its manufacture in America was a $15,000,000 industry in prewar days. Acetic acid is made from it in great quantities by a catalytic hydration process. Acetic acid is well known in vinegar but its greatest use is in making plastics of the cellulose acetate type, including cellulose acetate silk, the best kind of rayon.

The German methods for deriving acetylene from coal gas are said to be more efficient than American processes. The United States has large quantities of natural gas, of which only a relatively small amount is now used for the production of chemicals. Chemists feel that the German methods are adaptable to the production of acetylene from natural gas, giving America another source of this important basic chemical.

Further investigation of the German process is now being made by American chemists overseas. The findings will be made public through the Office of the Publication Board, U. S. Department of Commerce.

*Science News Letter, August 17, 1946*

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FORESTRY

# Timber for the Future

**American timber lands, if handled properly, can meet needs. But growing own trees is most practical plan for lumber business.**

➤ A FOREST resource appraisal just completed answers the question relative to America's ability to meet current and future needs in wood products. The answer is "yes," in spite of heavy war drains, if modern practices and policies are followed.

A group of experts representing the American Forestry Association has completed a three-year survey, and recently reported to the Association's committee which met recently at Roscommon, Mich., and which is drafting plans for the restoration and development of the country's tree-growing lands.

The report declares that from the nation's 465,000,000 acres of commercial forest land, 44,000,000,000 board feet of saw timber could be taken annually, and that pulpwood needs could be met without reducing the forest productivity. But, it states, to harvest this much wood without serious damage to the forests will require many changes in woods practices and policies.

One difficulty in establishing widespread modern scientific forest management is due to the percentage of tree-growing areas in private ownership. Over 90% of the products of the forests now come from privately-owned forest lands, although these lands contain only 55% of the merchantable timber, the report states. The other 10% comes from the 45% of merchantable timber under control of the federal government, states and other political subdivisions.

Privately-owned lands bore the brunt of the four-year war harvest of 131,400,000,000 board feet of lumber and over 59,000,000 cords of pulpwood, farm woodlands in the east being heavily cut. To assure some degree of control over future cutting, the program committee will propose a plan of action for consideration at the fall meeting of the American Forest Congress to be held in Washington, D. C., Oct. 9 to 11.

## Lumbermen Grow Own Trees

➤ WITH THE nation's lumber bins emptied by four years of war, lumbermen, farmers and private forest owners not only must, but can now well afford to take the advice of conservationists they have been ignoring for 80 years.

It is now more practical for them to meet the shortage by growing their own trees than it is to buy up virgin timber, declares J. B. Woods, director of a three-year inventory of the nation's forest resources.

The great economic advantages to be gained by private forest owners today, by proper forest management, added Mr. Woods, was the point most stressed throughout the three-day session of the meeting. On the basis of the inventory which he made for the American Forestry Association, the committee drafted a program of restoration and development for the country's tree-growing lands. To arouse public support of the program, it will be presented to the American Forest Congress.

One thing the inventory shows is that we have "contracted our frontiers," said Mr. Woods. It is still possible to increase production to meet the postwar emergency, but it must be done by growing new trees. Old forest stands cannot long support the heavy cuttings necessary.

To assure this, one of the points which will be proposed to the Congress is a vigorous nationwide expansion of advice and technical assistance to the four million owners of small forest properties, which comprise 57% of the commercial forest area of the country. "Tree Farm" and "Trees for Tomorrow" movements will be encouraged.

Believing that "good forestry practice begins at home," the committee is sponsoring adoption by states of forest practice laws. These would be similar in some ways to the old Code laws, resulting 10 years ago from the NIRA, the first attempt at nation-wide controls over lumber manufacturers in the interest of conservation. Coming from the states, and made up by the people who are closer to the problems, it is the belief of the committee, Mr. Woods explained, that they will be more effective than federal administration.

It is the opinion of Mr. Woods that unless this shortage is met quickly, the lumber industry will lose parts of its war-gained market back to wood-substitute building materials.

*Science News Letter, August 17, 1946*

AERONAUTICS

## Navy's "Project Squid" Studies Rockets and Jets

➤ UNDER THE name, "Project Squid," five universities are conducting a two-year research program to develop liquid rocket and intermittent jet propulsion devices for the Navy.

Institutions participating in the $2,000,000 studies set up by the Navy's Office of Research and Inventions at the request of the Bureau of Aeronautics are Cornell, Purdue, Princeton and New York Universities and the Polytechnic Institute of Brooklyn.

Fundamental research in aerodynamics, chemistry, mathematics and physics will be included in the comprehensive studies, believed to be the largest peacetime program of scientific research and development in American history.

Headquarters of "Project Squid" have been established at Princeton with Dr. Hugh Stott Taylor, dean of the Princeton Graduate School and chairman of the Princeton department of chemistry, serving as chairman of a six-man policy committee. Pending appointment of a full-time director of the program, Prof. Robert N. Pease of Princeton is acting project director.

*Science News Letter, August 17, 1946*

MEDICINE

## African Sleeping Sickness Cured with New Drug

➤ SCIENTISTS in the interior of tropical Africa, armed with a new chemical weapon, have won another victory in their fight to control the dreaded plague, African sleeping sickness.

Early cases of the fatal disease, long thought to be incurable, and previously battled by attacks on its carrier, the tsetse fly, have been cured in one week of treatment with the new drug. P-arsenosophenylbutyric acid is its name.

Dr. Harry Eagle, of the U. S. Public Health Service, in cooperation with the Sleeping Sickness Services of the Belgian Congo, French Equatorial Africa, French West Africa, the Gold Coast, Nigeria, treated 319 human cases of one type of African sleeping sickness be-

fore the central nervous system had become infected.

The success of the treatment varied with the total amount of the drug administered, but it was estimated that more than 90% of the early cases can be cured within a period of one week if the standard total dosage set by this experiment is used. Treatment with other drugs may have to continue for as long as 12 to 15 weeks, according to some published reports.

Doctors administering the new drug to natives found also that injections into the muscles of the patients proved to be as effective in treating the disease as the previous method of injection into a vein.

Mass treatment of sleeping sickness patients throughout tropical Africa may be simplified even more when the studies now in progress of the treatment of more advanced cases are reported.

*Science News Letter, August 17, 1946*

PHYSIOLOGY

# Living 29,000 Feet Up

➤ TWO NAVY volunteers lived without supplemental oxygen for 30 minutes in conditions simulating an altitude of 29,025 feet while doctors kept valuable records on living in high altitudes, Commodore J. C. Adams, chief of the division of aviation medicine of the Navy's Bureau of Medicine and Surgery, announced.

Lt. (jg) Walter S. McNutt, Jr., Jefferson, Texas, and hospital apprentice Carlton R. Morris, Farmerville, La., actually were in a 10 x 10 foot pressure chamber at the Naval Air Station, Pensacola, Fla., when they "climbed" 23 feet higher than Mt. Everest. The atmospheric conditions in the room were those of a higher altitude than man has ever before survived without added oxygen.

The experiment, dubbed "Operation Everest," built up the simulated altitude from sea level conditions to the record height in 32 days and tested the adaptation of the human body to anoxia, the decreasing supply of oxygen encountered at high altitudes. Two other volunteers, hospital apprentice Earl D. Wilkins, Jr., Dorchester, Mass., and pharmacist's mate Horace C. Hertel, The Dalles, Ore., blacked out after the conditions went above 27,000 feet. They were revived with additional oxygen.

After living at the record altitude conditions for half an hour on July 30, the "high living" volunteers were given oxygen and pressures were lowered to simulate 50,000 feet. The chamber was gradually returned to sea level conditions at the end of the operation.

Mt. Everest, for which the high-altitude experiment was named, rises 29,002 feet above sea level in the Himalaya Mountains in northern India, and no climbers have ever reached its peak, the highest in the world.

Terming the experiment "a new chapter in altitude physiology," Commodore Adams pointed out that this study is the first scientific record of effects on the human body of conditions at such high altitudes for any length of time.

Careful records were kept of the men's temperatures, blood pressures and weights during the experiment and special devices recorded their heartbeats as they slept at night.

Recreation for the "guinea pig" volunteers in the more-than-a-month of living in the pressure chamber included reading books on mountain climbing.

*Science News Letter, August 17, 1946*



***FLYING HIGH—Respiration is being checked on volunteer for Operation Everest, Navy's experiment to test adaptation of the human body to anoxia, the decreasing supply of oxygen encountered at high altitudes. Both doctors wore oxygen masks while in the altitude chamber.***

MEDICINE

## Report First Adult Survivor of Rare Disease

➤ A "UNIQUE" case in medical history, the first adult known to have survived an attack of the rare disease, toxoplasmosis, is reported by Dr. Jerome T. Syverton and Dr. Howard B. Slavin, of the University of Rochester, N. Y., School of Medicine and Dentistry, in the *Journal of the American Medical Association* (July 27).

Only one other patient, a child, is known to have survived this ailment. The germ that causes the disease is a large one-celled parasite called toxoplasma. The disease itself was unknown to medical scientists before 1939. Since then, only 35 cases have been reported, three of them in adults.

The case reported by the Rochester doctors was discovered by accident. While most of the previously reported cases showed signs of brain injury or of inflammation of the membranes covering the brain, the Rochester patient had symptoms more like those of typhoid fever or some other intestinal infection.

Blood tests and the course of the disease led the doctors to suspect trichinosis, so they cut out a tiny piece of a leg muscle and examined it under the microscope. Instead of finding the worm that causes trichinosis coiled in a cyst in the muscle, they found toxoplasma organisms.

*Science News Letter, August 17, 1946*

ENGINEERING

# Model Typhoon Defense

**See Front Cover**

➤ NEARING completion in an airplane hangar is a huge model that will help engineers plan a scientific defense for the Navy's new harbor at Guam against the ravages of Pacific typhoons.

Built on a scale of 1 to 300, the model is 120 feet square and will accurately reproduce waves, surges and other hydraulic conditions in the Guam harbor. The model is being built by the California Institute of Technology and the Navy's Bureau of Yards and Docks. It is shown in the hangar on the front cover of this SCIENCE NEWS LETTER.

Apra harbor at Guam is to be a permanent naval base, probably the first harbor of its size to be so completely planned. Covering nearly seven square miles, the new installation will replace wartime construction and be built on the basis of studies made of the model.

The $275,000 study that includes the model began a year ago with a 40-foot-square model on the campus of the California Institute of Technology. This earlier laboratory structure was large enough to give an accurate picture of the harbor for placing buildings and the breakwater, but it was not adequate for studies of the inner harbor and defense against the destructive typhoons.

A huge basin with a concrete bottom and two-foot steel sides, the new model will even have beaches of real sand when finished. Pneumatic wave machines simulate the harbor's water motion, while an oscillograph records the movements of the miniature waves. A strong light beamed on floating button reflectors permits time photograph records of currents in the model harbor.

Special data are being collected at Guam to insure the accurate reproduction of the harbor site.

From studies of the model will come the placement of slips, docks and drydocks in the Navy's Apra harbor so as to best protect ships of the fleet and the harbor installations from the ocean's movements.

The model studies are being directed by Prof. Robert T. Knapp, of the California Institute of Technology, under the supervision of Rear Adm. John J. Manning, chief of the Bureau of Yards and Docks.

*Science News Letter, August 17, 1946*

SEISMOLOGY

# Earthquake's Epicenter

➤ THE EARTHQUAKE that shook the Dominican Republic and deluged its coastal towns with a sea wave on Sunday, Aug. 4, had its epicenter under the sea off the island's northeast coast. Seismologists of the U. S. Coast and Geodetic Survey, who used data assembled telegraphically by Science Service from nine observatories all the way from Alaska to Puerto Rico, said that a submarine fault in the rocks of the sea bottom off the Gulf of Samana was the apparent cause of the disturbance.

The quake began at 12:51.1 p.m., EST, on Sunday, and there were two heavy aftershocks on Thursday, Aug. 8, besides many lighter ones throughout the week. The epicenter was in latitude 19.3 degrees north, longitude 69 degrees west. This is a spot on the sea bottom nine miles off the eastern end of the Samana peninsula.

The Coast and Geodetic Survey seismologists also traced the epicenter of the earthquake that caused some damage and loss of life in northern Chile on Friday, Aug. 2, to a spot near the town of Copaipo. This shock occurred at 2:18.7 p.m., EST.

Data on both earthquakes were furnished by observatories of the Jesuit Seismological Association at St. Louis; Georgetown, Xavier and John Carroll Universities and Weston College; Pennsylvania State College; the Seismological Observatory at Pasadena, Calif., and the stations of the U. S. Coast and Geodetic Survey at College, Alaska; San Juan, P. R.; Honolulu, Tucson, Ariz.; and Ukiah, Calif.

*Science News Letter, August 17, 1946*

*Benzedrine*, used in treatment of certain depressive conditions such as alcoholism, has been successfully used as an antidote for sleeping pill poisoning.

ASTRONOMY

## New Comet Jones Discovered in Puppis

➤ A NINTH magnitude comet has been discovered in the southern constellation of Puppis, the ship's stern.

Too faint to be seen with the naked eye, but visible with high-powered binoculars, the comet was spotted at 1:20 p.m., EST, on Aug. 6 by A. Jones of Timaru, New Zealand. I. L. Thomson of the New Zealand Astronomical Society cabled news of the discovery to Harvard Observatory, clearing house for astronomical information in the Western Hemisphere.

When found, Comet Jones had a right ascension of 7 hours, 56 minutes, and a declination of minus 13 degrees, 15 minutes. Its daily motion is three minutes of time eastward and fifteen minutes of arc southward.

Mr. Jones, after whom the comet will be named, is one of the most skillful observers of variable stars in the Southern Hemisphere. His variable star observations are regularly contributed to the international headquarters at the observatory at Cambridge, Mass.

*Science News Letter, August 17, 1946*

PSYCHOLOGY

## National Sovereignty Not Greater Than Security

➤ THE REACTIONS in human minds all over the world are more important just at the moment than what happens within the atomic bomb.

Psychologists have just offered the expert opinion that the idea of national sovereignty does not have such a strong hold on the American people that it would stand in the way of international control of atomic energy.

It is true, a committee of the Society for the Psychological Study of Social Issues reports, that "national sovereignty" is a cliche, a pat phrase or a stereotype. But it can be changed when, as in the case of atomic energy and its possibilities for destruction, it no longer gives assurance of strength and security.

The psychologists argue that international friendship and understanding can be cultivated, that neither war nor peacefulness is inborn in man, that liking and trusting of other peoples as well as hatred can be learned.

*Science News Letter, August 17, 1946*

AGRICULTURE

## Harvesting Machine Saves Sweet-Potato Vines

➤ MEAT AND MILK can be produced from thousands of tons of a farm product now wasted—sweet-potato vines. This has been made possible through the development of new harvesting machines by U. S. Department of Agriculture engineers.

Sweet-potato vines are highly nutritious as stock food, but because they cling to the soil with little roots produced every few inches, no practical machine-harvesting method has hitherto been devised.

The new method does the job in three stages. First, a sliding shoe holds the vines down while a rolling blade cuts them into manageable lengths. Next, a flat blade just under the surface sweeps the vines into windrows atop the cultivated hills.

Finally, a revolving drum beset with receding fingers picks up the vines. As they are carried over its top the fingers withdraw into the drum. At this point they are picked up by a slatted conveyor and carried to a trailer for removal.

The vines are run through a chopping machine and fed into a silo for storage until needed.

*Science News Letter, August 17, 1946*

SOCIOLOGY

## Ten Reasons Why Punishing War Criminals Will Fail

➤ PUNISHMENT of Japanese and German war criminals "will increase the probability of World War III," Dr. Donald R. Taft, University of Illinois sociologist, believes.

Predicting failure for the punishment of World War II war criminals, Dr. Taft declares, "If we can think less of punishing war criminals and more of reducing international tensions, there is possibly a chance for avoiding war."

Writing in the *American Sociological Review* (Aug.), he says that the value of punishing the war criminals must be judged in terms of its effect on starting another war.

The Illinois sociologist lists ten reasons why he believes the punishment of war criminals will be a failure:

1. The punished will feel they are being judged by war criminals because of Allied acts such as the atomic bombings.

2. Punishment is being inflicted by war conquerors and not "peers" of the punished.

3. The social approval of criminal acts is greater than execution in the minds of some of the punished. Goering, facing probable execution, is said to have declared he would follow Hitler again if he were to have the chance.

4. More war criminals will escape punishment than will be punished.

5. Other criminal acts, such as dangerous doctrines and discrimination, will go unpunished.

6. Punishment by victors may appear unjust to former enemies and potential supporters of the punished.

7. If nationalism survives in Germany and Japan, it will tend to make the punishment of the war criminals ineffective.

8. Punishment alone cannot change antisocial attitudes to social attitudes.

9. Punishment that expresses hatred is ineffective.

10. Individual punishment of war criminals distracts attention from the need to attack the basic causes of wars.

*Science News Letter, August 17, 1946*

MEDICINE

## Streptomycin Effective For Influenzal Meningitis

➤ STREPTOMYCIN is destined for a life-saving role in yet another deadly disease, influenzal meningitis, it appears from studies reported by Dr. Hattie E. Alexander and Dr. Grace Leidy, of Columbia University's College of Physicians and Surgeons, in *Science* (Aug. 2).

Compared with sulfadiazine and serum, now used together in treatment of the disease, streptomycin is at least one hundred times as effective in protecting mice.

Encouraging results have been obtained in treatment of 10 human patients with the disease, the Columbia doctors report.

Influenzal meningitis used to be 100% fatal. With the advent of sulfa drugs and serum, the mortality has been reduced to about 30%. Hope of reducing this mortality still further and saving more lives prompted the doctors to study the action of streptomycin against the germ, hemophilus influenzae, type B, which causes influenzal meningitis. This is not the germ, or virus, which causes influenza, however.

*Science News Letter, August 17, 1946*

# IN SCIEN

INVENTION

## Device to Arrest Engine Exhaust Flames

➤ AN ENGINE exhaust flame arrester, particularly for aircraft, was awarded patent 2,401,806. Lynn A. Williams, Jr., Northfield, Ill., received the award, and he has assigned it to the Stewart-Warner Corporation of Chicago.

It is a device to prevent the burning of exhaust gases at the outlet end of aircraft engine exhaust pipes. The flame created is usually due to the combining of the discharged carbon monoxide with oxygen in the air. It has relatively little importance in commercial and private flying, but great importance with military planes active at night because the flaming tail gives away the craft's position.

The device is designed to reduce the temperature of the exhaust gases enough so that they will not ignite in the air. It consists of several rows of in-take tubes in fan-shaped arrangements that scoop up air to cool the gases within a special section of the exhaust tube. A damper determines whether the exhaust gases travel by way of the special cooling tube or discharge through the ordinary route.

*Science News Letter, August 17, 1946*

PHYSICS

## Nuclear Release Old as Sun's Heat

➤ RELEASE of nuclear energy, the process that smashed Jap cities, sank Navy ships at Bikini and promises a new world in peace or war, is as old as the sun's heat, Dr. Emilio Segre, University of California physicist, points out.

An old story in nature, nuclear reactions create the sun's heat, he explained.

"Moreover, it has been known for many years that the radioactive substances contained in the crust of the earth play a most important part in maintaining the temperature of the interior of the earth at its present level," Dr. Segre stated.

"The great achievement of the atomic bomb work," he said, "is not so much to have released nuclear energy, as to have released it in large quantities and under controllable conditions."

*Science News Letter, August 17, 1946*

# E FIELDS

WILDLIFE

## To Count Squirrels Count Nuts They Eat

➤ THE LAST word on how to count squirrels is to count the less elusive nuts and acorns they feed on.

Such is the theory of a state-wide census program of the Missouri Conservation Commission, being undertaken because of hunters' complaints last year that a lot of time was wasted looking for squirrels that weren't there.

Reckoning that under-nourished squirrels are in no condition to bear young in the spring, Commission members conceived the idea of placing seed traps under sample trees in different parts of the state in order to measure the annual squirrel food crop.

Rule-of-thumb experience by Missouri hunters in previous years suggested existence of a definite relationship between squirrel food and hunted squirrels.

*Science News Letter, August 17, 1946*

PHOTOGRAPHY

## Lie-Detector for Library Research Work

➤ A "LIE DETECTOR" for Shakespeare, designed to aid library research work, may be used to detect fingerprint differences and show up forgeries.

The device for revealing printers' errors in microfilmed copies of early editions of Shakespeare's works was invented by Dr. Charlton Hinman, research fellow at Folger Shakespeare Library.

The technique which Dr. Hinman finds speeds up his work by 50 times could perhaps be applied also to the detection of counterfeits, in reconnaissance work by the Army and Navy to detect a change in enemy fortifications, or for any work requiring the high-speed detection of differences between two supposedly similar objects.

Two copies of the page to be compared are first perfectly imposed on a screen, by use of a half-silvered mirror. Flashed alternately on the screen, all words identical in the two copies remain motionless. Passages, words or letters that are different are instantly detected by a bright flickering. In this way, Dr. Hinman can note all differences between two pages in one minute, a job which formerly took him an hour.

As the first step in the process, microfilmed copies of a page or map are mounted on one glass slide, and the copies to be compared with them are mounted on another slide. With two micro-projectors set at right angles to each other, the two copies of the object are focussed on the screen together. By transmitting the image from the copy directly behind the half-silvered mirror and reflecting the image of the copy located to one side, two pictures go to the screen from exactly the same point.

Alternating of the two images on the screen starts when two sectored occulting discs geared together are set in motion. Controlled by a rheostat, the speed of alternation can be varied by the operator. The bright flickering will reveal differences as small as variation in inking between the copies.

*Science News Letter, August 17, 1946*

METEOROLOGY

## Midget Batteries Power Balloon Weather Stations

➤ CANDY-BAR-SIZED batteries are now powering small radio transmitters in balloons that soar up to 12 miles above the earth gathering weather data.

Approximately four inches in length and one and one-half inches wide, the inch-thick batteries were developed by the Army's Signal Corps Laboratories in conjunction with several industrial organizations. Energy from these lead-acid batteries operates the radiosondes that gather figures on humidity, temperature and pressure as the balloon goes aloft.

Vacuum packed, four in a set, the batteries come in a dry, "precharged" state and are activated by an acid solution electrolyte by puncturing the container with a hollow steel rod. This allows the acid to be sucked up from a jar through a synthetic rubber tube attached to the rod.

The container is opened by a key that winds up a strip below the top of the can, and the excess acid is poured off. The midget battery is then ready for use.

When the hydrogen-filled balloon bursts at high altitudes, sometimes as high as 15 miles above the earth, the sensitive equipment parachutes earthward, continuing the signals that record weather data.

*Science News Letter, August 17, 1946*

MEDICINE

## Cancer Linked to Female Hormone

➤ THE ROLE that estrogenic or ovarian hormone plays in the production of cancer is indicated in two medical reports published in the *Journal of the American Medical Association* (July 6).

In a paper by Drs. L. Halberstaedter and A. Hochman of Jerusalem, Palestine, the artificial menopause was induced by irradiation of the ovaries in the case of 60 women suffering from cancer of the breast and its metastases. Of these, 34 or 56% benefited from this treatment. The improvement due to the interruption of estrogenic secretion is of short duration, it is reported, since vicarious estrogenic secretion from other sources than the ovaries intervenes.

What is believed to be the first report of the occurrence of endometrial cancer, which is malignancy in the mucous membrane lining the uterus, in a woman undergoing prolonged treatment with estrogen is reported by a group from the Massachusetts General Hospital and Harvard, consisting of Dr. Maurice Fremont-Smith, Dr. Joe V. Meigs, Ruth M. Graham and Helen H. Gilbert.

*Science News Letter, August 17, 1946*

GENERAL SCIENCE

## Radio Insulation Inventor Wins Stalin Award

➤ FOR THE discovery of a new dielectric substance that may revolutionize the manufacture of insulation material, Prof. Bentsion Vul, well-known Soviet physicist and head of the laboratory of dielectrics in the Institute of Physics of the USSR Academy of Sciences, has been awarded the Stalin prize.

The new substance, barium titanite, possesses a dielectric constant, a number which rates its ability as a non-conductor, several times higher than that of usual dielectrics. By offering a high resistance to wide temperature changes, the new substance promises to furnish the most stable insulating material ever developed for radio and electrical industries.

During the war several hundred thousand high-frequency condensers, made from a less stable magnesium and calcium titanite insulation material developed by Prof. Vul, were produced by Soviet industry and used in the manufacture of radio equipment.

*Science News Letter, August 17, 1946*

SOCIOLOGY

# Forever Hungry World

**Too many people is real world problem, not just too little food. Along with industrializing countries, populations must be educated to limit births.**

By MARTHA G. MORROW

➤ THE TROUBLE that causes a starving world is not alone too little food but too many people.

Fertility that plows and reaps the plains of the earth fills the world to overflowing with more and more human beings with ever-open mouths.

"The welfare of mankind is balanced on the two great realities of birth and death. It cannot be too often emphasized that where low living conditions and increasing numbers push a hungry people toward starvation, relief which lowers death rates without a corresponding lowering of birth rates must in the end compound disaster."

Thus does Guy I. Burch, tall, lean Washington scientist and director of the Population Reference Bureau, advise a world combating the greatest famine in all its history.

Every power-grabbing group, whether a democracy or dictatorship, wants to grow by pure increase in numbers into a majority. Mussolini cried for more people. Hitler offered bonuses for large families. American cities today vie with each other for increase in population. To reproduce and fill the earth to overflowing with one's own kind seems to be an emotional hangover from primitive times.

Yet this increase has resulted in chronic undernourishment for a vast majority of the earth's people. Today, last year, a decade ago, there simply was not enough food to take care of the world's hungry horde. During so-called normal times two-thirds of the people in the world suffer from undernourishment.

This year's total world farm output of food, in terms of calories, will be only about 5% less than the prewar 1935-39 average. Yet when allowance is made for the net increase in world population during the war years, the per capita world production will be about 12% less, estimates of the U. S. Department of Agriculture show.

### More People Than Before War

It might be imagined that after such a destructive conflict as World War II there would be fewer people in the world than before the war. This does not happen to be the case. While the war has destroyed tremendous amounts of wealth, natural resources and means of industrial production, Mr. Birch figures that the demand for these facilities because of population increase has risen some 7%.

Want of the necessities of healthful living—of food in sufficient quantity and quality, of sanitary conditions and of proper medical care—caused the untimely death of from 20,000,000 to 30,000,000 human beings a year even before World War II. Thus about as many die from want in one "peaceful" year as were killed during the five years of war.

The majority of the people of this world are pitifully poor and must do without many of life's necessities as well as most of its luxuries. Even before this war four out of five of the earth's breadwinners failed to earn each week enough to buy what $10 would have bought in the United States during 1925 to 1934. More than half of the world's people have a real income of less than $4 per week per breadwinner, estimates Colin Clark, British authority on international levels of living.

### Fewer People Per Acre in U. S.

In prewar times the average worker in Italy and Japan had only about one-fourth as much to spend on his family as the typical American worker.

Uninformed Americans may believe that their higher level of living is due to their ingenuity and intelligence, but facts point to another reason. There are only 250 persons for each square mile of arable land here in the United States, while in Italy there are almost 900 and in Japan over 3000 persons for each square mile of arable land.

The mineral resources of these countries, on the other hand, in no way compare with those of the United



*U. S. Dept. of Agriculture photograph* *Official U. S. Navy photograph*

***PLENTY AND WANT—There is just not enough food such as the lush grain on the left to feed this hungry world. Millions of people, like the starving Okinawan child at right, suffer from malnutrition.***

States. The United States has more than 60 times as much iron ore per person as Japan, for instance, and nearly 200 times as much coal.

The average breadwinner in Germany before World War II could buy only half as many of the necessities and luxuries of life for his family as a worker in the United States. Germany's reserves of iron ore per person were less than one-fourth as large as ours. Her reserves of coal per capita were about one-sixth as great as ours. There were about three times as many people for each square mile of arable land in Germany as here in the United States.

Before inflation took over in China and raised the price of everything sky-high, each week the average breadwinner could buy only as much as $1.40 would purchase here in America. But one-fifth of the people in the world live in China while only one-eighteenth of the earth's population resides in the United States where a breadwinner has an average income of $28 a week—about 20 times as great.

In India one out of four dies on or before his second birthday. Feed India enough to keep her babies from dying and within 100 years there would be 12,000,000,000 Indians or more. That is five times the number of people on the earth today.

### Growth Throughout World

This suicidal increase in population is not occurring just in so-called backward countries, but also in those that have been industrialized. In these the length of life is ever increasing while the number of children brought into the world continues to be large.

The USSR and tiny Puerto Rico head the list of countries throughout the world as far as population increase is concerned. With birth rates far surpassing death rates, these two countries could double their populations about every 30 years.

There are nearly 12 times as many people for each square mile in Puerto Rico as there are in the United States, yet there the birth rate is twice as high. It has changed little since the island came under the American flag, yet the death rate has been cut in half.

Our fellow American citizens in Puerto Rico, tiny island bursting at the seams with people, eat less than one-third as much meat, eggs, milk, cheese, vegetables and other protective foods as the average white person in the United States. They get only about one-half as much to eat as Negroes in our Southern cities.

"If Puerto Rico explodes in population, it may cause little disturbance in world politics. Only the inhabitants of that island may suffer. But if Russia's already huge population explodes into a program of territorial expansion," Mr. Burch says, "this would shake world civilization to its foundations."

Today there are urgent appeals for famine relief for China's 450,000,000 people, for India's 400,000,000, for Europe's 500,000,000. Other countries like the Philippines, the Dutch East Indies, parts of Africa and the Near East cry for food.

But the crisis has only in part been brought about by the destructive war. The world is chronically hungry. Every year around 20,000,000 more people are added to the world's population—20,000,000 more to feed, yet few additional natural resources are being discovered to add to the earth's dwindling supply. Famine will eternally endanger a majority of the earth's people unless the number stops growing so enormously each year.

### World Must Be Educated

The world must be educated to conserve human resources as well as natural resources. Mr. Burch's studies show that the people of the world cannot be freed from want and war by programs of industrialization and technology unless accompanied by a humane world program for limiting the number of people on this earth.

This is the basic world problem as Mr. Burch sees it. If science lowers the death rate without a corresponding decrease in the birth rate, millions of babies each year will be born only to starve. A program of population limitation must be realistically studied by the society of nations. Some means for educating the world toward this end must be adopted before there can ever be hope for enough food to give each individual a life-sustaining share.

*Science News Letter, August 17, 1946*

AERONAUTICS

## NACA and Army Design XS-1

➤ MAN'S FIRST attempt at flight faster than sound will be made soon in a Bell Aircraft-Army XS-1, a plane that follows design knowledge developed by the National Advisory Committee for Aeronautics, it has been revealed.

The XS-1 has been built by the Bell Aircraft Corporation under contract with the Army Air Forces. It is based on high-speed design principles provided by the NACA, with specifications worked out by the NACA, the Army and Bell in cooperation.

The airplane incorporates the latest supersonic knowledge. It is the result of studies made on models conducted in NACA wind tunnels, from the early stability tests in seven- by ten-foot tunnels and a spin tunnel to the later transonic investigation in an eight-foot high-speed tunnel.

Drag and thrust information through the upper transonic range was furnished chiefly by studies of free-falling test bodies released from high altitudes. These streamlined bombs exceed the speed of sound, and have furnished the most accurate knowledge of drag at sonic speed and the thrust required to overcome it.

Just how fast the rocket-powered XS-1 will be able to fly will probably depend on how the controls react near the speed of sound, NACA officials state. This, rather than the drag and thrust that can be calculated, constitutes the real unknown. The "transonic" region, from roughly 500 to 900 miles per hour, is difficult to duplicate in a wind tunnel due to shock waves that "choke" the tunnel. NACA wind tunnels have provided accurate information up to 96% the speed of sound, and this indicates that the XS-1 will include rapid and severe changes in control characteristics.

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## Do You Know?

Many of the 150,000 *cancer deaths* each year in this country are unnecessary.

The strength of a *scar* following the healing of a wound is dependent upon the amount of vitamin C in the diet.

*Vinegar* added during the canning process helps retain the bright red color of fresh beets.

*Colchicine,* the drug used to develop new varieties of plants, is being successfully used in the treatment of gout.

The output of *iron ore* in Italy last year was only 5% of what it was before the war.

Surplus and undergrade *potatoes* fed to livestock every year in the United States amount to about 5% of the total crop.

Like snakes and turtles, *lizards* are reptiles and are hatched as miniature adults rather than developing from a larval stage.

Heating *flour* in the oven at about 170 degrees Fahrenheit for half an hour will kill any flour weevils present, no matter what stage of development.

*Cows* grazing on weed-infested pastures are almost certain to give off-flavored, low-quality milk; dairy specialists recommend taking the cows off grass two or three hours before milking.

One of the many *enemies* encountered in mahogany logging is the marine borer teredo; once it starts to work it can completely riddle the rafted logs within a few weeks.

Long-keeping *rye bread* was baked in Germany during the war in an oven placed inside a steam boiler from which some of the steam entered the oven; the bread had no crust.

*Insect repellent,* developed by the Naval Medical Research Institute and known as Repellent 448, will keep flies, mosquitoes and other pests away for 36 hours in temperate climates; it can be used on clothing and animals.

The XS-1 has already been tested in the air about a dozen times but without its own power. It was taken aloft by bombers and released to glide and dive downward. Controls are reported to function satisfactorily in these tests. When its rocket engines are installed and the plane is ready to fly under its own power, it will be tested in the air by the Army at gradually increasing speeds until its airworthiness is established. Then the attempt will be made, at very high altitude where the air is rare and resistance is less, to beat the speed of sound, approximately 760 miles an hour at sea level.

In all, three models of the XS-1 will be built. One will be flown by the Army, one retained by Bell Aircraft for experiments, and one retained by the NACA. Rockets have travelled much faster than sound, but the XS-1 is the first American pilot-carrying plane designed for sonic and supersonic speeds. Other nations are trying, but none has yet succeeded.

*Science News Letter, August 17, 1946*

CHEMISTRY

# Famine as a Weapon

**Chemicals developed during the war which might be used to promote famine in the event of another war are being put to excellent peacetime use.**

➤ FAMINE WILL join with atomic bombs and man-made pestilence to make World War III an apocalyptic horror, if mankind becomes so mad as to start fighting again. And while it may be possible to protect factories, and even dwellings, against atom bombs by hiding them underground, famine cannot be escaped in that way because crops have to be up on the surface in the sunlight.

Visions of famine as a weapon are proved to be realizable at will even now, by publication of details of biological warfare experiments carried on in the deepest of wartime secrecy at Camp Detrick, Md. Dr. A. J. Norman of Iowa State College, who was in general charge of the work, joins with a group of colleagues in presenting results of the researches in the Chicago University's *Botanical Gazette* (June).

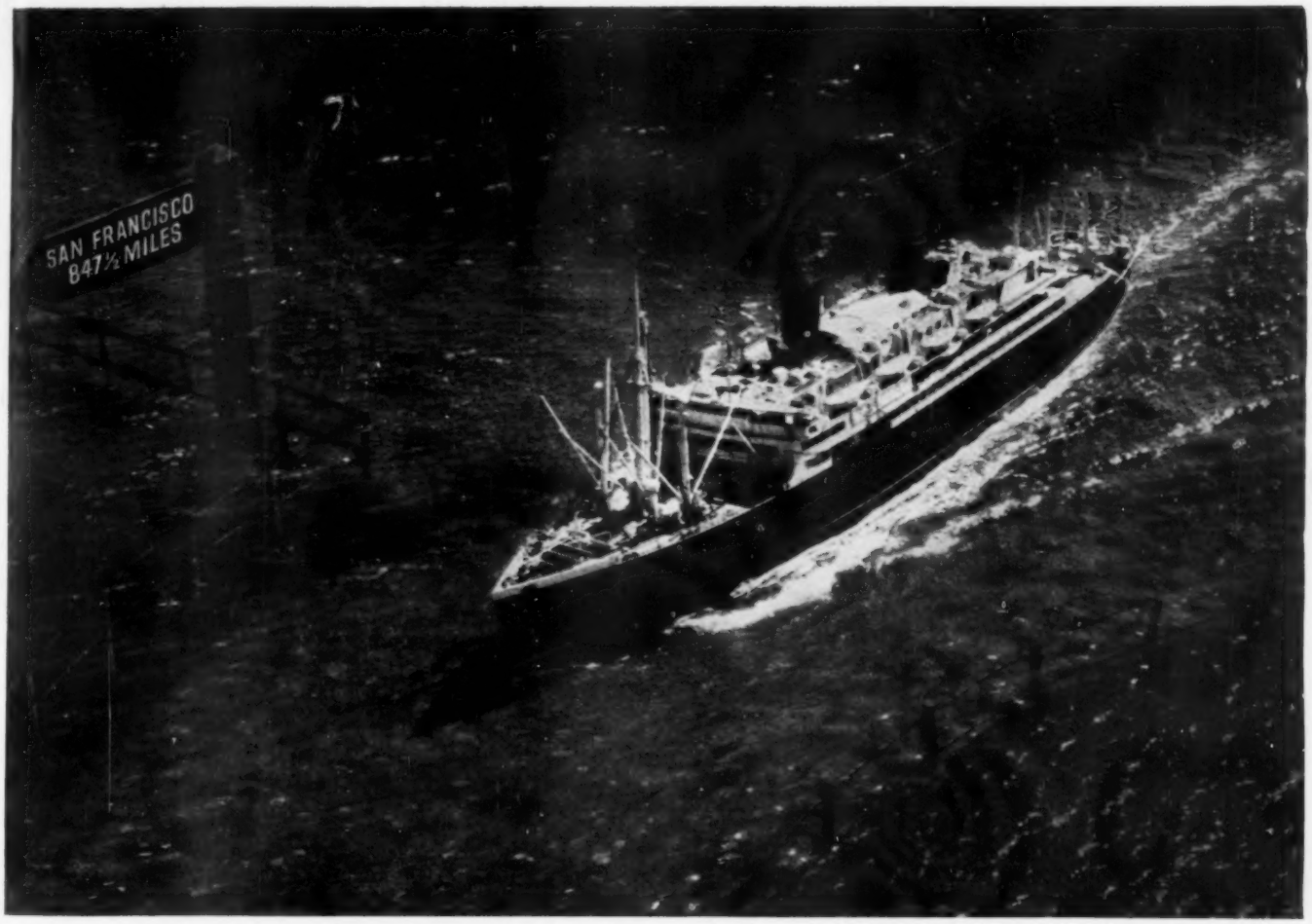
The chemicals that can be used to spread famine by ruining an enemy's crops are complex organic compounds. One of them has already come into general use as a weed-killer under the convenience-designation of 2,4-D. The Camp Detrick experimenters tested the effects of about 1,100 of these, and found that some of them are even more toxic to plants than their prototype.

It would not be necessary to kill all the plants in a field to make the crop a failure, the experiments showed. One drop of a very dilute solution of some of the chemicals falling on a leaf would cause the stem to twist and often also to develop lumpy, tumor-like galls. The plant might survive, but it would live on only as a twisted, stunted cripple, unable to produce its full quota of food. Spraying tops can seriously affect underground parts, too; in some of the experiments potato tubers were badly damaged by chemicals used on the vines above them.

Contact with the chemical does not need to be prolonged to work a great deal of mischief. In some cases the plant begins to become sick and crippled in as little time as an hour after the fatal drop has fallen on a leaf. And if the chemical is dissolved in oil instead of water it will stick to the leaf and do its poisonous work, even if a heavy rain comes up immediately after the oil-drop has fallen and stuck.

A considerable number of food plants was used in the experiments—enough to indicate pretty thoroughly that no crop can be considered safe. Among them were corn, wheat, barley, oats, potatoes, tomatoes, soybeans, kidney beans, cabbages and turnips. Had either Germany or Japan launched a biological warfare drive against us (and it was known that both had ideas of doing so) a counter-attack against their crops would have followed very quickly.

Now that these compounds are not needed for the grim business of war they can be used for purposes of peace. One of them, 2,4-D, is already on the job as a weed killer, where others may presently join it. Others may be employed in lighter doses to stimulate plants rather than kill them. Among possible uses along this line are (*Turn to page 110*)




*Developed during the war, Loran projects long-distance radio beams to guide ships on lanes charted by radio-electronics.*

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**Loran (short for LOng RAnge Navigation)** uses radio waves which hug the earth's surface instead of going off into space. Two sets of stations, about 300 to 400 miles apart, send out impulses to a Loran receiver on shipboard like the one shown above. It then shows the ship's exact position.

RCA **RADIO CORPORATION of AMERICA**

ZOOLOGY

# NATURE RAMBLINGS

*by Frank Thone*



**Familiars of Satan**

➤ RATS APPEAR in many late medieval and early modern paintings as familiars of warlocks and witches, and even of the Devil himself—and quite appropriately so. There is hardly any living creature that follows man more ubiquitously, damages his possessions in more fiendishly ingenious and persistent ways, or is capable of bringing death to him in more terrifying form.

Ancient Babylonians had a god of flies—Beelzebub, the Baal of Buzzing Things. The concept of such a disgusting deity probably arose out of a primitive instinct to propitiate that which you find you cannot combat. That they had no god of rats may seem strange, until it is realized that they had no rats. Rats, though probably Asiatic in origin, did not achieve their present world-wide distribution until the rise of world-wide commerce. Rats are natural beachcombers; and they'll jump ship wherever the pickings ashore look good.

Rats' destructiveness to property is reckoned in simply fantastic multiples of millions. Any good-sized city could easily maintain a municipal university on what rats devour, spoil and set fire to.

Rats live in filth and are menaces to health generally. Their greatest danger comes from the fact that the fleas which they harbor are the natural carriers of that most terrible of Asian scourges, bubonic plague.

Man has long been almost helpless in the face of rats, for they can be kept down only at the cost of constant and highly expensive eradication campaigns. Within the past few years, however, two rodenticides have been developed that at least seem to provide man with proper weapons in the hitherto hopeless fight. They are the terrifically toxic 1080, unsafe for any but professional use, and ANTU, which the householder may handle with impunity to himself and devastating effect on the rats.

*Science News Letter, August 17, 1946*




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BIOPHYSICS

## Ultraviolet Lamp Kills Germs in Refrigerator

➤ DEATH COMES quickly to mold and bacteria in household refrigerators equipped with a new tiny ultraviolet lamp.

The walnut-size lamp, that costs a nickel a month to operate, is double-acting: it gives off bacteria-killing rays and also produces ozone which circulates within the cabinet. It is a Westinghouse product.

Research proves, Westinghouse engineers state, that the bactericidal radiation and ozone wave lengths emitted by the lamp assure odorless refrigerators, improve sanitation, enable longer preservation of food, and check the growth of mold and bacteria on the food.

The lamp, about the size and shape of an automobile headlight bulb, is a midget brother of the large Westinghouse Sterilamp in tubular form up to 45 inches in length that is used to halt bacteria in the food industry, and to minimize infection by airborne bacteria in schools and hospitals.

A step-down transformer is used with it to reduce the voltage of the household current to the 12 volts needed by the three-and-a-half watt lamp. A specially-designed tungsten filament within the lamp has long life because it glows for only three seconds each time the refrigerator compressor starts. This is just long enough to start the arc that produces the ultraviolet rays as it passes through a mercury vapor atmosphere.

*Science News Letter, August 17, 1946*

## From Page 108

increasing the yield of apples, preventing the premature dropping of fruit, and killing potato vines before harvesting the tubers.

The research program carried out at Camp Detrick was first suggested by Prof. E. J. Kraus of the University of Chicago, and some of the first work was done in his laboratory there, just across the street from the site of the first nuclear-energy pile. Some of the later experiments were also carried out at the U. S. Department of Agriculture's experiment station at Beltsville, Md. A considerable number of compounds used, which had never previously been made, were synthesized by Prof. Melvin S. Newman at Ohio State University.

*Science News Letter, August 17, 1946*



***BACTERIA BLASTER—This miniature lamp was designed especially to provide bactericidal ultraviolet protection and air-purifying ozone in home refrigerators. Its designer is shown checking the ultraviolet produced by the lamp in a refrigerator cabinet.***

# • Books of the Week •

ANAEROBIOSIS IN INVERTEBRATES—Theodor von Brand—*Biodynamica,* 328 p., tables, $4.80. A survey of the occurrence of anaerobiosis, of anaerobic metabolism, and of data on the adaptations of invertebrates to anoxic conditions, and on the origin of their anaerobic functions.

APES, GIANTS, AND MAN—Franz Weidenreich—*Univ. of Chicago,* 122 p., tables and illus., $2.50. An outline of modern scientific opinion on the physical development of man, including a survey of the various theories of evolution, a chapter on the races of mankind, and one concerned with the development of man's brain.

BIBLIOGRAPHY OF THE GEOLOGY AND NATURAL RESOURCES OF NORTH DAKOTA—Chrissie E. Budge—*North Dakota Research Foundation,* 214 p., paper, free. North Dakota Research Foundation, Bull. No. 1.

THE BIRDS OF SAN JOSE AND PEDRO GONZALEZ ISLANDS, REPUBLIC OF PANAMA—Alexander Wetmore—*Smithsonian Institution,* 60 p., illus., paper, 30 cents. Smithsonian Miscellaneous Collections, Vol. 106, No. 1.

THE CEDARTOWN, GEORGIA, METEORITE—Stuart H. Perry—*Smithsonian Institution,* 3 p., illus., paper, 15 cents. Smithsonian Miscellaneous Collections, Vol. 104, No. 23.

COMMUNITY CANNING CENTERS—*Government Printing Office,* 86 p., tables and illus., paper, 30 cents. Information on the establishment and operation of community canning centers based on information obtained from authorities in the field of canning. The canning techniques presented are for approved steam-pressure and water-bath methods and are based on ungraded products packed in a clean, sanitary manner.

EMULSION TECHNOLOGY: Theoretical and Applied—*Chemical Pub. Co.,* 360 p., tables and diagrs., $6.50, 2nd ed. Discussions of viscosity, surface-film, surface-tension, phase-volume, solid particles, adsorption, hydration, etc. This new edition contains a section on the theory of emulsions, a list of emulsifying agents, and authoritative data on methods of formulating practical emulsions in many industrial fields.

ENGLISH-FRENCH AND FRENCH-ENGLISH TECHNICAL DICTIONARY—Francis Cusset—*Chemical Pub. Co.,* 590 p., $5.00. A handy volume compiled to help the technical man in reading French.

THE GARDENER'S BUG BOOK: 1000 Insect Pests and Their Control—Cynthia Westcott—*Doubleday,* 590 p., illus., $4.95. A manual on insect pest control including description of the plant enemies which attack flowers, shrubs, trees, lawns, vegetables, and fruits, and giving data on the basic factors of successful control and the equipment for dusting and spraying.

HOME-BUTTERMAKING—D. H. Nelson—*California Agricultural Extension Service,* 14 p., illus., paper, free. California Agricultural Extension Service, Circular 68.

HOMENAJE AL PROFESOR ARQ. JOSE A. MICHELETTI—*Universidad Nacional del Litoral,* 33 p., illus., paper, $1.50. Serie: Universitaria, No. 37.

INTO THE FREEZER—AND OUT—Donald K. Tressler, Clifford F. Evers, and Lucy Long—*Avi Publishing Co.,* 223 p., tables and illus., $2.50. A handbook for those interested in the home freezing of foods, for those using local locker plant facilities, and for those operating locker plants.

PROCEEDINGS OF THE AMERICAN PHILOSOPHICAL SOCIETY—*Am. Philosophical Soc.,* 161 p., paper, $1.00. Ground-Plans and Prints of the Univ. of Virginia: 1822-1826, by Edwin M. Betts; The Antiquaries and Sir Henry Spelman by Robert Schuyler; Origin of the Moon and its Topography by Reginald Daly; Heroes of Sumer by Samuel Kramer; and The Colonial Impulse by Howard Mumford Jones, Vol. 90, No. 2.

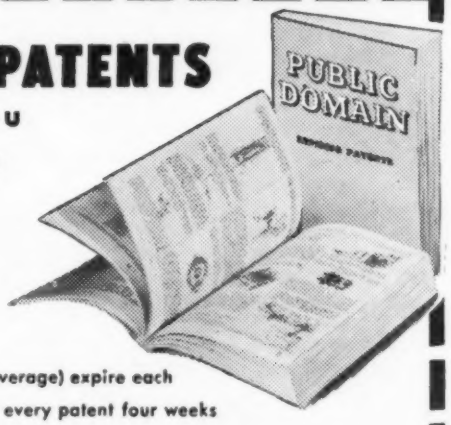
TURTLES COLLECTED BY THE SMITHSONIAN BIOLOGICAL SURVEY OF THE PANAMA CANAL ZONE—Karl Patterson Schmidt—*Smithsonian Institution,* 9 p., illus., paper, 15 cents. Smithsonian Miscellaneous Collections, Vol. 106, No. 8.

UNITED STATES LIFE TABLES AND ACTUARIAL TABLES: 1939-1941—Thomas N. E. Greville—*Government Printing Office,* 153 p., tables, $1.25.

WE DROPPED THE A-BOMB—Merle Miller and Abe Spitzer—*Crowell,* 152 p., $2.00. The eye-witness story of what happened over Hiroshima and Nagasaki, told by the radio operator of the *Great Artiste,* one of the three planes that flew on these history-making missions.

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# ·New Machines And Gadgets·

❁ *FUNNEL and stand, home-made, makes easy the job of filling packages for home freezing. A rim at the top of the funnel keeps liquids from spilling; the mouth of the funnel extends into the package so that foods do not touch inside sealing edges of the liner.*

*Science News Letter, August 17, 1946*

❁ *HOT WATER heater, a stoker-fed coal-burner, works automatically for at least 30 days, and uses cheap grades of fuel. When a thermal control regulator calls for heat, driving mechanism starts and moves coal into the retort.*

*Science News Letter, August 17, 1946*

❁ *SUN SURREY is a three-wheeled beach car, which seats two riders, who operate bicycle pedals while sitting side-by-side. Behind the seat is a large locker, and an awning to keep off the sun.*

*Science News Letter, August 17, 1946*

❁ *AUTOMATIC coin-changer makes change for dimes and quarters. If a quarter is deposited in a candy bar vending machine, it sends back the merchandise and four nickels in change. It also accepts nickels for exact payment and can detect and reject slugs.*

*Science News Letter, August 17, 1946*

❁ *IMPROVED all-purpose electric mixer is of light-weight plastic and can easily be held in one hand. The stainless steel*



*...ier and shaft will mix, whip, or beat ingredients in small jars and glasses as well as in regular mixing bowls.*

*Science News Letter, August 17, 1946*

❁ *RUBBER HEEL, with an improved shock cushioning device, entraps air between two layers of rubber. The soft upper portion contains upwardly slanted air pockets staggered with downwardly slanted pockets in the harder tread layer. Lower layer, when worn, can be replaced separately.*

*Science News Letter, August 17, 1946*

❁ *POCKET-SIZE sharpener resets dulled scissors in a few two-way strokes on each blade. The carborundum cutting stone, set in a flat nickel-plated angle guide, is moved up and down on top of the blade. Any of its four surfaces can be used.*

*Science News Letter, August 17, 1946*

❁ *NEW TYPE trussed rafter for small houses has four basic members plus two bracing ones, and saves lumber by eliminating heavy bearing partitions. It can be fabricated on the job or mass-produced in a shop.*

*Science News Letter, August 17, 1946*

❁ *SPIRAL-CUT saw blade, for wood, light metals and plastics, is a fine rod with spiral-running teeth the full length. It resembles somewhat a type of wood screw that has widely separated threads. It can cut in any direction without changing the position of the saw frame.*

*Science News Letter, August 17, 1946*

*If you want more information on the new things described here, send a three-cent stamp to SCIENCE NEWS LETTER, 1719 N St., N. W., Washington 6, D. C., and ask for Gadget Bulletin 224. To receive this Gadget Bulletin without special request each week, remit $1.50 for one year's subscription.*

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*Where published sources are used they are cited.*


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